Montana Hospital Discharge Data System

Quarterly Surveillance Report

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Potentially Avoidable Hospitalizations For Chronic Disease In Montana, 2000-2008[1]

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Potentially avoidable hospitalizations (PAH; also called ambulatory-care-sensitive conditions) may be prevented with high quality primary and preventive care. The Agency for Healthcare Research and Quality (AHRQ) uses 16 Prevention Quality Indicators (PQIs) to monitor progress toward improved primary and preventive care.[2] Nine focus on chronic disease in adults: uncontrolled diabetes without complications, short-term complications of diabetes, long-term complications of diabetes, diabetes-related lower extremity amputations, congestive heart failure, hypertension, angina without procedure, adult asthma, and chronic obstructive pulmonary disease.

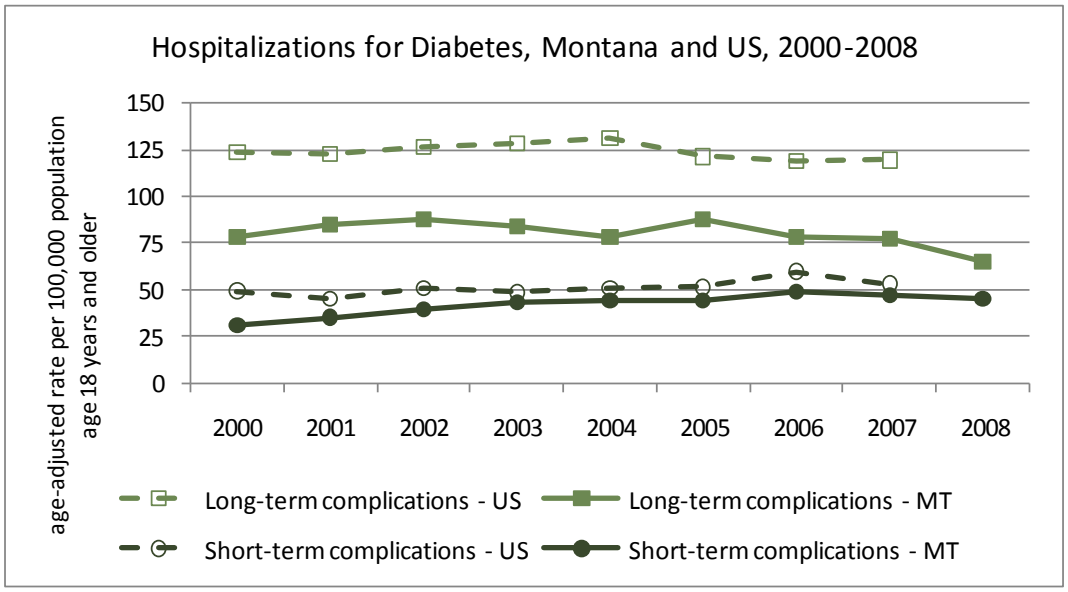
In some categories, PAHs have declined since the late 1990s in the US as a whole (uncontrolled diabetes without complications, angina, adult asthma), although there has been no change in others, and in some categories hospitalizations have actually increased (short-term complications of diabetes, hypertension, chronic obstructive pulmonary disease).[1] In the US as a whole, rural residents are more likely to be hospitalized for preventable conditions, as are the uninsured.[2,3]

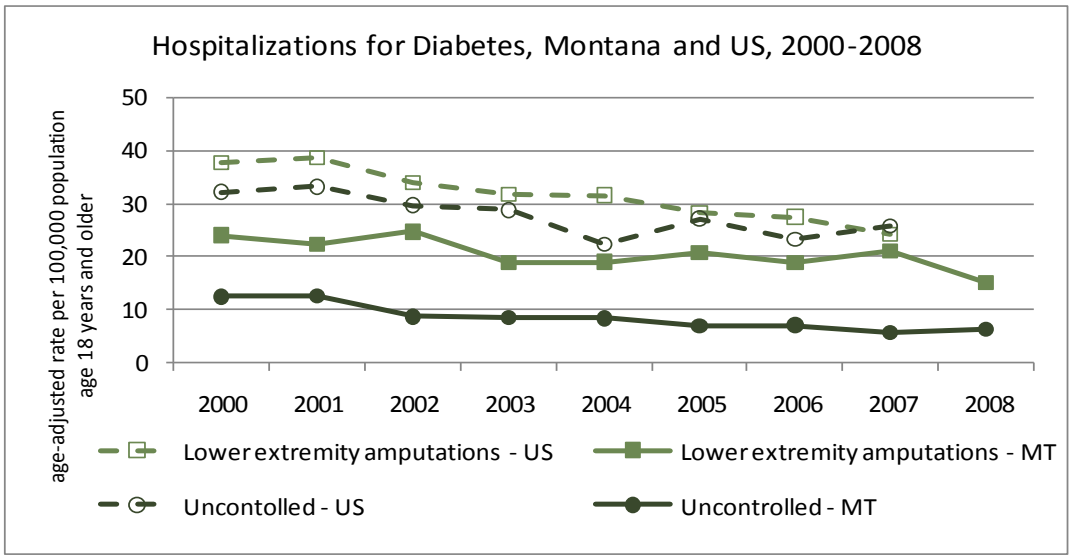
The MHDDS calculated age-adjusted adult (18 years and older) admission rates[4] for chronic disease PQIs for Montana and the nation from the MHDDS and the National Hospital Discharge Survey,[5] and NCHS population data,[6] using definitions provided by AHRQ.[7]

Hospitalization rates for short-term complications of diabetes in Montana increased from 2000 to 2008 and now approach the national rates. On the other hand, although hospitalization rates

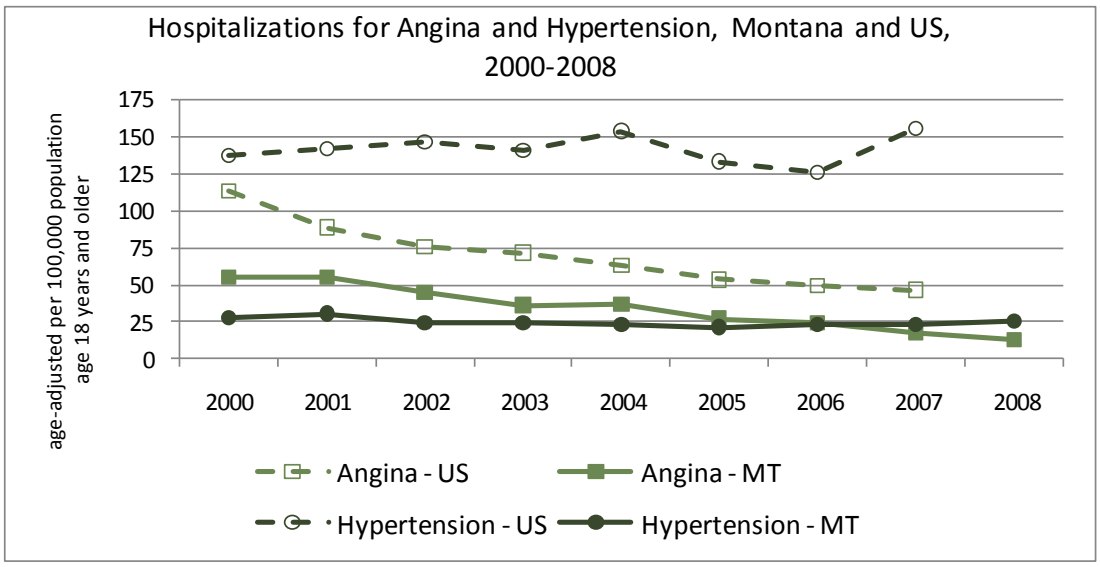
[1] The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge data sets through a memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting of discharge data from their Uniform Billing Forms, version 2004 (UB-04). The MHDDS receives information on more than 90% of the inpatient admissions from non-psychiatric facilities in the state; it does not receive data on emergency department visits or outpatient procedures at this time.
[2] http://www.ahrq.gov/data/hcup/factbk5b.htm
[3] Finegan MS et al. 2010. *Health Services Manag Res* 23:66-75; Chang CF and Pope RA. 2009. *Pub Health Rep* 124:127-137; Basu J et al. 2004. Health Serv Res 39:489-510
[4] Klein RJ, Schoenborn CA. Age adjustment using the 2000 projected U.S. population. Healthy People Statistical Notes, no. 20. Hyattsville, Maryland: National Center for Health Statistics. January 2001.
[5] Centers for Disease Control and Prevention, National Center for Health Statistics. National Hospital Discharge Survey Public Use Data Files, 2000-2007. url: http://www.cdc.gov/nchs/nhds.htm.
[6] Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2008, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2008). Prepared under a collaborative arrangement with the U.S. Census Bureau; released May 14, 2009. Available from: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm as of September 2, 2009
[7] http://www.qualityindicators.ahrq.gov/downloads/pqi/word/pqi_guide_v31.doc

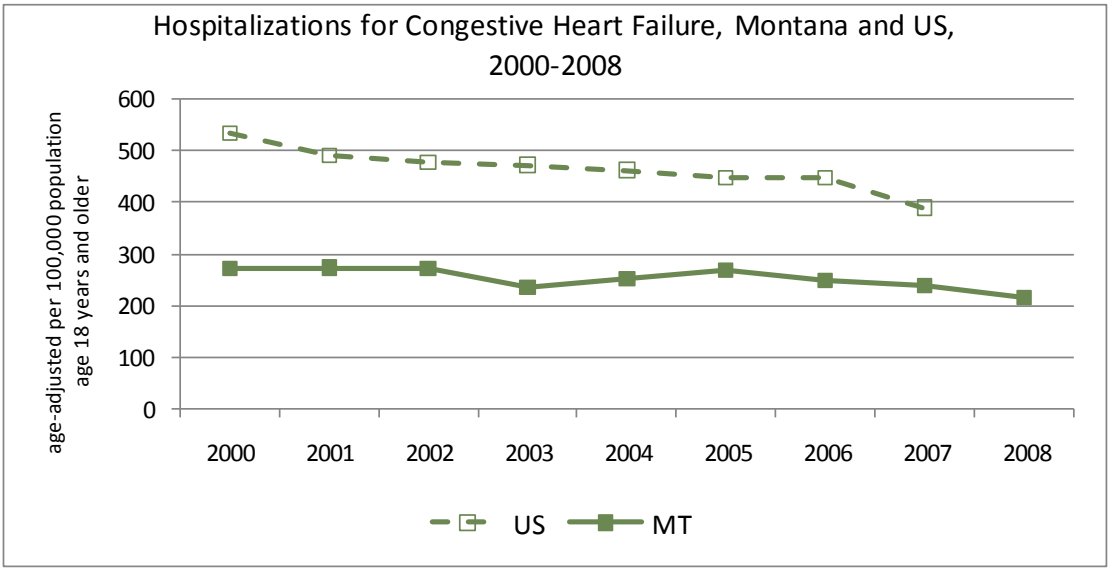
for long-term complications of diabetes in Montana were essentially stable from 2000 to 2008, they remained substantially lower than national rates. Diabetes-related lower extremity amputations in Montana were stable from 2000 to 2008, as were hospitalizations for uncontrolled diabetes, consistent with national trends. While rates of long-term complications of diabetes, uncontrolled diabetes, and diabetes-related lower extremity amputations were stable in Montana, the increase in hospitalizations for short-term complications of diabetes is concerning; hospitalizations for short-term complications in Montana are now near the national rate.



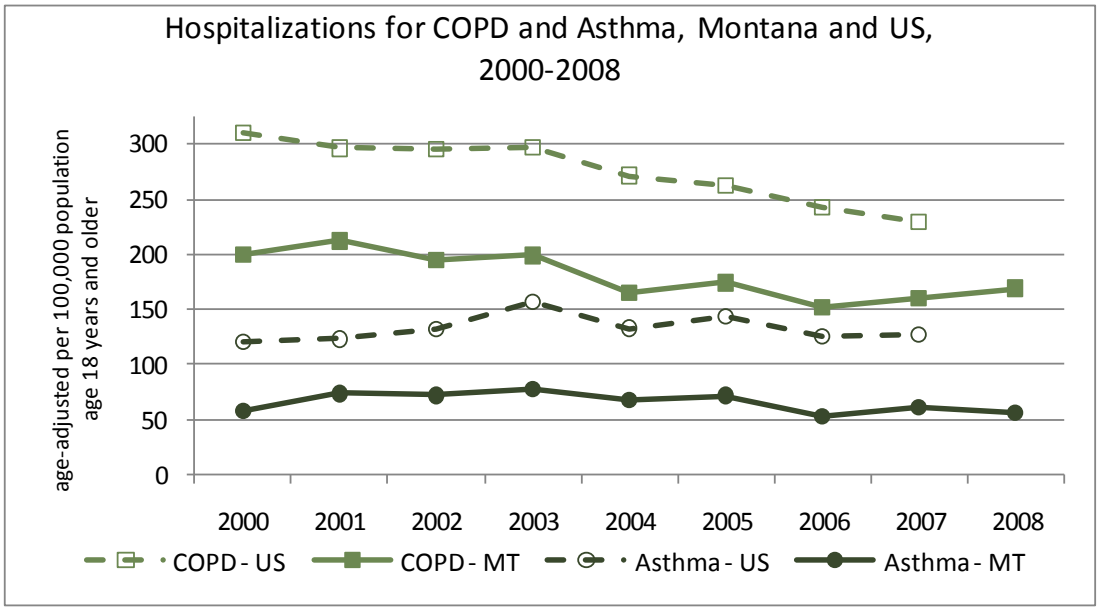


Hospitalization rates for angina without procedure in Montana fell by two thirds from 2000 to 2008. This is consistent with a declining trend for the nation as a whole. Montana hypertension hospitalization rates remained stable, while national rates trended upward. Hospitalizations rates for congestive heart failure in Montana were half the national average for the period 2000-2008.





Hospitalizations for COPD declined slightly from 2000 to 2008; adult asthma hospitalization rates remained stable. Montana asthma hospitalization rates were half those for the nation.

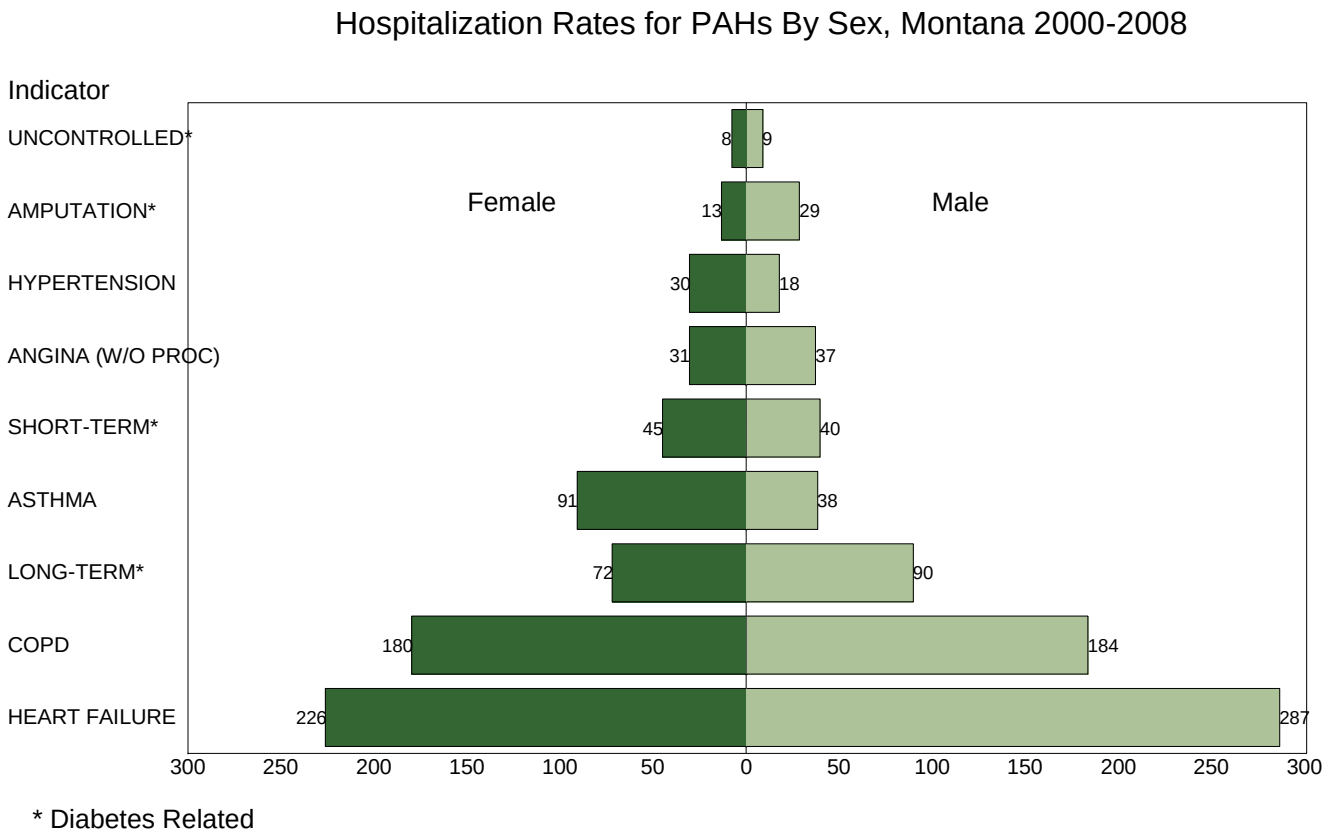


Montana admission rates for most PQIs related to adult chronic disease did not change substantially from 2000 to 2008, with the exceptions of angina, for which admissions greatly decreased, and short-term complications of diabetes, which increased. Admission rates for preventable hospitalizations in Montana were dramatically lower than those for the nation as a whole, consistent with AHRQ findings of substantially lower (48%) PQI admission rates in the West.[8] Low inpatient admission rates reflect both the underlying health and relative youth of the Montana population, along with the quality of outpatient care. Two lifestyle factors are major contributors to the prevalence and severity of chronic disease: Montana's prevalence of overweight in 2009 (38%) and obesity (24%) are not substantially different from the national prevalence (36% and 27%, respectively), although Montana has only recently caught up with the nation, especially in terms of obesity. It is possible that the lag in the prevalence of obesity has delayed an upturn in PAHs in Montana.[9] The prevalence of adult smoking in Montana (20%) is similar to the national prevalence.[10]

Preventable hospitalizations can highlight disparities. MHDDS data contain no information on race; they do contain information on sex and urban / rural residence. Adult males were more than twice as likely to be hospitalized for diabetes-related lower extremity amputation as adult females, consistent with an earlier report from the MHDSS.[11] Adult females were twice as likely as adult males

[8] http://www.ahrq.gov/data/hcup/factbk5/factbk5b.htm
[9] http://www.cdc.gov/obesity/data/trends.html
[10] http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5809a1.htm
[11] http://www.dphhs.mt.gov/PHSD/MT-HDDS/documents/ExtremityAmputationsinMontana2000_2008.pdf

to be hospitalized for asthma, which is partially explained by the fact that adult females are one and a half times more likely to have asthma.[12,13] In addition, adult females tend to have more severe asthma than adult males.[14] Adult females were twice as likely to be hospitalized for hypertension as adult males, despite having similar prevalence as males.[15] Differences for each indicator were statistically significant in Poisson regression models, after incorporating age.[16]

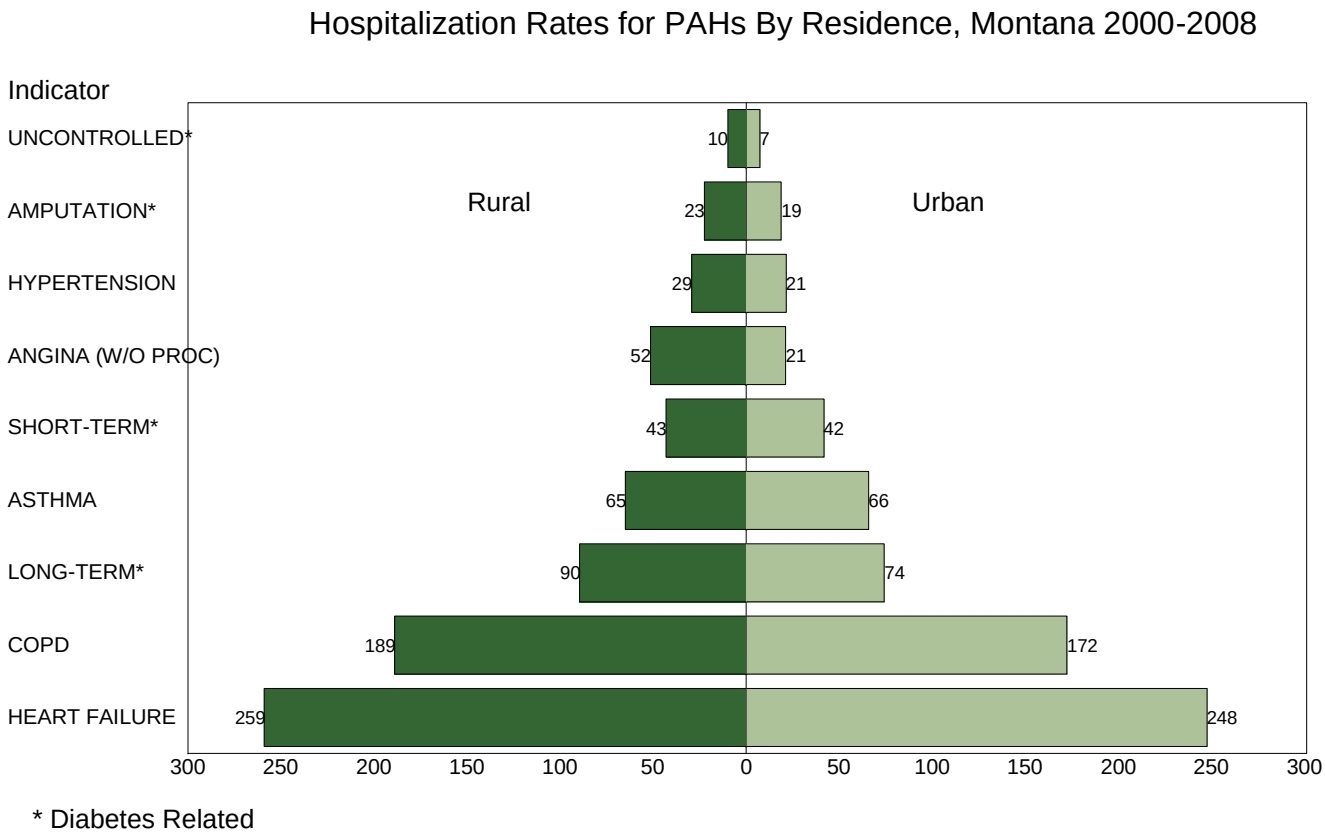


* Diabetes Related

Urban counties are defined as containing either a metropolitan or micropolitan standard area. In Montana, the urban counties are Cascade, Flathead, Gallatin, Hill, Lewis and Clark, Missoula, Sliver Bow, and Yellowstone.[17] For most conditions, hospitalization rates for rural residents were similar to those for urban residents, although all differences were statistically significant in a Poisson regression model incorporating age.[18] Rates of angina hospitalizations with or without procedures were 54.1 per 100,000 for residents of rural counties and 24.3 per 100,000 for residents of urban counties.

[12] Montana BRFSS, 2001-2006
[13] National Health Interview Survey, National Center for Health Statistics, CDC, Compiled 9/19/2008
[14] Carey, Michelle A., Card, Jeffrey W., Voltz,et. al. It's all about sex: male-female differences in lung development and disease. Trends in Endocrinology & Metabolism. Volume 18, Issue 8, October 2007
[15] Montana BRFSS, 2001-2006
[16] R Development Core Team (2009). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.
[17] http://mcdc2.missouri.edu/webrepts/commoncodes/ccc_mt.html
[18] R Development Core Team (2009). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.

Among patients admitted for angina, only 6% of residents of rural counties had a cardiac procedure performed, compared with 14% of residents of urban counties. The higher admission rate is due both to higher rates of angina admissions for residents of rural counties, and to fewer cardiac procedures being performed for those admissions, probably due to limited capacity to perform such procedures in small, rural, hospitals.



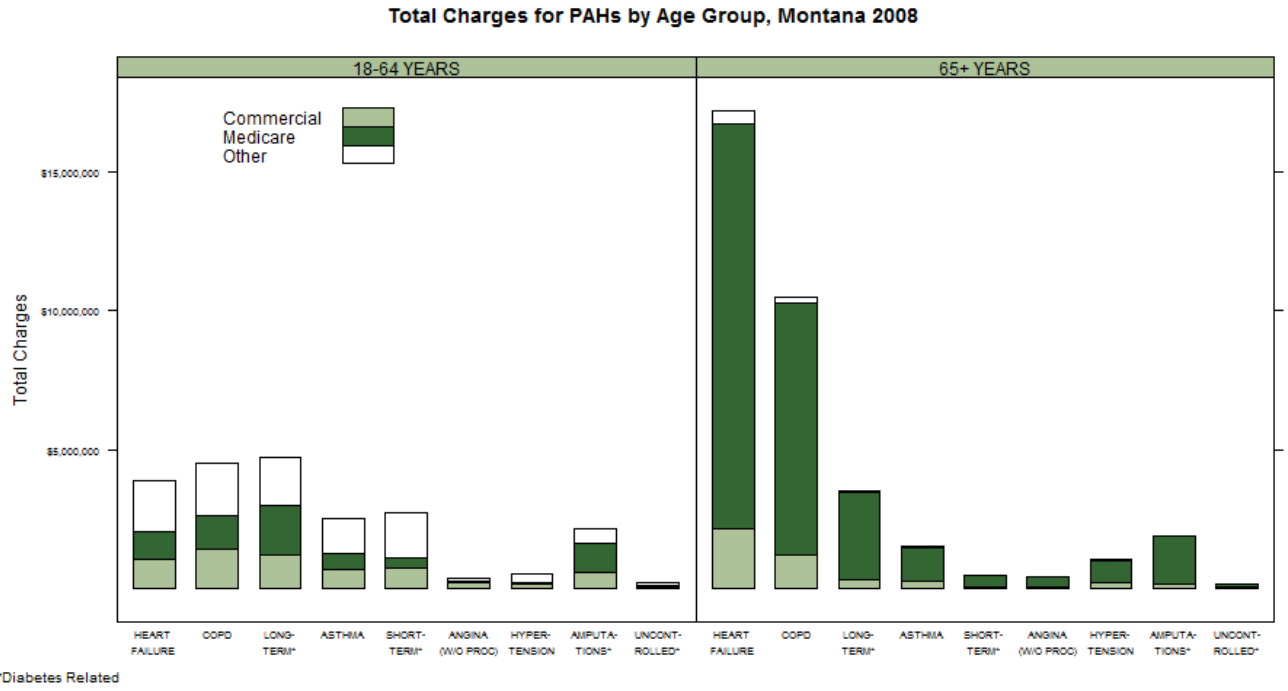
* Diabetes Related

Although the differences in hospitalization rates by sex and urban / rural residence were statistically significant, for many PQIs this reflects the large sample sizes involved, not necessarily differences of practical importance. Apart from the male preponderance in diabetes-related amputations, female preponderance in asthma hospitalizations, the rural preponderance in angina without procedures and long-term complications of diabetes, the differences are of small relative magnitude and probably do not indicate disparities that need to be specifically addressed. It is encouraging that rural residents of Montana, 45% of our population, appear to have similar access to primary and preventive care as residents of urban areas.[19]

PQIs provide information for payers to better focus preventive services. Total cost per admission was added to the MHDDS beginning in 2008. For adult patients younger than 65 years, charges for diabetes-related lower extremity amputations, asthma, COPD, long-term and short-term

[19] http://www.census.gov/compendia/statab/2010/tables/10s0029.xls

complications of diabetes, and congestive heart failure each resulted in total charges aggregated across all patients of between $2.5 million and $5 million, with total charges of $22 million for the nine PQIs. For patients over 65 years, total charges were $18 million for heart failure hospitalizations alone, with an additional $10 million for COPD hospitalizations and $9 million for the other seven PQIs, for total charges of $37 million. For those aged 18-64 years, commercial insurance paid 28% of costs, Medicare paid 28%, and other payers (including Medicaid) paid 44%. For those over 65 years, Medicare paid 85% of costs. Although admission rates for diabetes-related lower extremity amputations were not high, amputation is an extremely expensive procedure with average charge of $32,000 per hospitalization. Preventable admissions accounted for $59 million in charges for 2008 alone, which could be substantially reduced by improved primary and preventive care.



Prevention Quality Indicators reflect improvements and disparities in primary and preventive care. Montana's stable inpatient admission rates between 2000 and 2008 indicate a lack of improvement over a nine-year span. Similar admission rates between residents of urban and rural counties suggest that all Montana residents have similar opportunities for primary and preventive care, as do similar admission rates for males and females. With the lion's share of preventable hospitalization costs paid by Medicare, there are substantial opportunities for reducing such costs as well as improving the health of Montana's residents.

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Please visit our website at http://www.dphhs.mt.gov/PHSD/MT-HDDS/MTHDDS-index.shtml